REMARKS

The drawings are objected to under 37 CFR 1.83(a) stating that the "flat lens having unity transmittance and this is disposed optically upstream of a Fourier lens. . ." as claimed in claims 5 and 26 must be shown or the feature(s) canceled from the claims. Applicants assert that the flat lens having unity transmittance is represented in FIG. 3 as Modified Fourier Lens 31. As stated in the specification on page 7, paragraph 0031, in a preferred approach the modified Fourier lens 31 comprises a substantially flat optical element that is characterized by unity transmittance and is disposed optically upstream of a Fourier lens.

Claims 1-5, 10, 12, 14-28 and 32-38 are rejected under 35 U.S.C. 103 (a) as being unpatentable over US. Patent Application Publication No. 2002/0126644 to Turpin et al. (hereinafter Turpin) in view of "Carrier-to-Noise Ratio and Sidelobe Level in a Two-Laser Model Optically Controlled Array Antenna Using Fourier Optics," IEEE Transactions on Antennas and propagation, Vol. 40, No. 12, December 1992 to Konishi et al. (hereinafter Konishi).

With respect to claims 1, 12, and 24, the Examiner admits that Turpin fails to disclose that the single antenna shown in FIG. 3 of Turpin could have separate antennas for each of the incoming signals. The Examiner cites Konishi as disclosing an array of antenna elements which receive RF signals and each received electrical signal from a given antenna is electro-optic converted into respective wavelength signals. Applicants respectfully disagree.

Konishi describes an apparatus that transmits (not receives) RF signals to (not from) an array of antenna elements. Transmitting signals requires different methods and apparatus than receiving signals. The invention of claims 1, 12 and 24 recites an apparatus and method for receiving signals. Thus, it would not have been obviously to one of ordinary skill in the art at the time the invention was made to combine the teachings of Konishi's apparatus for transmitting signals with Applicant's apparatus and method of receiving signals. Further, the apparatus described in Turpin is not designed to operate with multiple antennas because it is designed as a single antenna apparatus. In FIG. 3, Turpin discloses a receiver having a single antenna that receives a multi-user signal

$S_n(t)$, but does not disclose multiple antennas receiving signals. (See page 6, paragraph 0081 which states signal 10 comprising multi-user signals (depicted as S1(t), etc.) is received by receiving means or antenna 12 and passed through signal conversion means 14.)

Further, claims 1, 12 and 24 recite an apparatus and method that uses a multiple wavelength optical correlator. In particular, claims 1 and 12 recite ". . . a first electrical signal . . . having at least a first output providing a first optical signal characterized by a first carrier wavelength . . .", " . . . a second electrical signal. . . having at least a second output providing a second optical signal characterized by a second carrier wavelength. . .", and "an optical correlator that the receives at least the first and second optical signal . . .". The Office Action incorrectly asserts that Turpin's multi-channel optical correlator is a multiple wavelength optical correlator as recited in Applicants' claims. Turpin's use of multi-channel is in reference to a single hypothesis being a channel, and therefore having multiple hypotheses makes it multi-channel (See page 1, paragraph 0006 - The multi-channel optical correlators conduct parallel (simultaneous) processing of the signal against a huge numbers of hypotheses to generate data ("correlations")). Further, Turpin states "[it] now has been found that a multi-channel optical correlation processor configured as a bank of 1-D correlators can easily provide the computational requirements of the foreseeable future" (page 4, paragraph 0054), suggesting that the mutli-channel being referred to are these multiple banks on which multiple hypotheses are allocated.

With respect to claim 5, the Examiner states that Applicants' specification states that the flat optical element characterized by unity transmittance disposed optically upstream of a Fourier lens is "well know in the art as is the practice of Fourier-based optics in general." The Examiner also asserts that Applicants also state that the purpose of such a setup is to "focus the individual plane waves of the incoming optical signals to a corresponding single point." Applicants submit that the Examiner has misinterpreted Applicants' specification. The specification does not state that the flat lens having unity transmittance is well known in the art. Rather, the specification states that the Fourier lens is well known in the art. Paragraph [0031] states "In a preferred approach, this modified

Fourier lens 31 comprises a substantially flat optical element that is characterized by unity transmittance and that is disposed optically upstream of a Fourier lens. The latter has an optical output that provides corresponding Fourier domain optical output signals. *Such lenses* are well known in the art as is the practice of Fourier-based optics in general. Therefore, additional description of such a lens will not be provided here save to note that the Fourier lens serves to focus the individual plane waves of the incoming optical signals to a corresponding single point." The antecedent of "such lenses" is the "latter" "Fourier lens", and not the "flat optical element" (i.e. flat lens having unity transmittance). Also, it is clearly stated in the specification that it is the Fourier lens that serves to "focus the individual plane waves of the incoming optical signals to a corresponding single point", and not the flat lens having unity transmittance.

Applicants maintain their argument with respect to claim 5. In particular, Applicants maintain that Turpin merely states in paragraph 0137 that FIG. 14 details that some optics that may be used in implementing some embodiments of the invention are beam-forming lenses 124, imaging lenses 125 and integration lenses 126. This statement does not anticipate the limitations of claim 5, namely, . . . a flat lens having unity transmittance and that is disposed optically upstream of a Fourier lens disposed between the first and second electrical signal input and the first and second output.

Regarding claim 24, Turpin does not disclose a code division multiple access radio receiver comprising a plurality of antennas and a multiple wavelength optical correlator. As previously stated, Turpin discloses a multi-channel optical correlator having a single receive antenna 12.

Regarding claim 26, Applicants submit that claim 26 is patentable for the same reasons as set forth above with respect to claim 5.

Claims 6-8 and 29-31 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Turpin in view of Konishi and further in view of U.S. Patent No. 6,529,614 to Chao et al (Chao). Applicants submit that claims 6-8 and 29-31 are allowable by virtue of their dependency, directly or indirectly, on allowable claims 1 and 24, respectively.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turpin in view of Konishi and further in view of Chao and further in view of U.S. Patent No. 6,570,708 to Bergeron et al (Bergeron). Applicants submit that claim 9 is allowable by virtue of its dependency on allowable claim 1.

In view of the foregoing amendments and remarks, Applicants submit that claims 1-10, 12, and 14-31 are in condition for allowance. Applicants request the reconsideration and reexamination of this application and the timely allowance of the pending claims. Please charge any fees associated herewith, including extension of time fees, to 50-2117.

Respectfully submitted,
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